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Abstract: In this paper we have studied the role of biases in making corporate decisions on investing abroad. We have formulated four conditions under which a corporate investment decision is least exposed to the influence of heuristics. Failing to comply with some conditions of a precise investment performance leads to a situation of a high uncertainty and complexity that demands an intuitive thinking from a decision maker and, as a result, stimulates using the rules of thumb. Further, we have discussed possible measures for the mitigation of the negative influence of heuristics. For an indicative estimation of a degree of biases an ex-ante/ex-post risk perception matrix has been proposed.

The study is supported by the results of a survey made in 2008 and structured interviews taken in the spring and the summer of 2013. The survey was carried on among German firms doing business in Russia. Interviews covered not only investments to Russia, but also investments of Russian investors in Europe as well as transatlantic foreign direct investments made in the last three years.

1. Introduction

Referring to heuristics as a reason that a foreign investment is not performing in line with expectations is not widely spread in the modern corporate practice. A manager explains it by some external factors beyond his or her control rather than by his or her own miscalculations, personal motivation or not consideration of decision relevant information. Not mentioning heuristics as a reason can be done by a manager either intentionally (he or she made a deliberate cognitive analysis and came to the conclusion that he or she was unreasonably optimistic about a foreign market volume) or unintentionally. The latter can be very realistic since heuristics are arisen in course of the intuitive thinking automatically. A manager could have been even unaware of them. In the companies with well-established procedures the impact of biases on a final investment decision can be mitigated through a procedural rationality and an involvement of cross-department teams in the investment assessment. On the other hand, accumulated experience can cause managerial overconfidence. If a company is successful for a decade in the domestic market, why should it not be that in the foreign market? In start-ups and early-stage firms centered around one or several founders using of heuristics can be even more important due to absence of proven routines and insufficient experience. Hence, a company of any size can be exposed to heuristics. This is crucial that corporate routines are able to track them. To make it possible, importance of biases should be recognized by managers themselves.

In this paper we discuss sources of biases in course of making decisions on investing abroad. We also propose an easy tool which can be used by firms to check whether investment decisions have been exposed to heuristics.

2. Review of literature

Behavioural economics and finance represent the theoretical framework of this paper. Behavioural finance has proved to be valuable especially in explaining paradoxes and phenomena on the financial markets (e.g. earnings announcement puzzle, underperformance of IPOs) (Brealey, Myers and Allen, 2008). Its application in the area of corporate investment decisions is more challenging because of the lack of publicly available information and lesser frequency of investment decisions of companies. Nevertheless, over the past decade the topic has gained popularity. A lot of papers have focused especially on the impact of the managerial overconfidence and

managerial optimism on firms investment decisions. The model of Gervais (2009) suggested that managerial overconfidence will most often lead to overinvestment. Hackbarth (2009) has shown that biased managers choose higher debt levels than rational managers. The phenomena of managerial optimism was extensively explored by Heaton (2002) who using a three data - two period model illustrated that optimistic managers will sometimes decline a positive NPV investment that must be financed externally or vice versa invest in a negative NPV investment. Managerial optimism hence predicts pecking order capital structure preferences for internal financing over external funding of investments and stresses the value of financial slack. The biggest challenge for the analysis of managerial overconfidence is the construction of a plausible measure (Malmendier & Tate, 2005). Malmendier and Tate (2004) proposed two ways for its measure (specifically applicable for CEOs):

- using stock option data as a proxy. In that case CEO is classified as overconfident if “(i) the CEO holds his options beyond a theoretically-calibrated benchmark for exercise, or (ii) the CEO holds his options even until the last year before expiration, or (iii) the CEO habitually buys stock of his company during the first five sample years”;
- analysing the tone used to portray CEOs in business magazines and newspapers.

Ben-David, Graham and Harvey (2006) draw overconfidence of American CFOs by asking them to predict one- and ten-year market equity returns and also to provide 80% confidence bounds around their estimates. The narrowness of the individual probability distributions for the stock market returns is used as a measure for the confidence of respondents. Similar to Hackbarth (2009), the authors confirmed that companies managed by overconfident individuals maintain higher financial leverage. They documented that individual overconfidence is related to both personal characteristics and firm specific factors. Namely managerial overconfidence increases with the degree of skills and education but decreases with professional experience (Ben-David, Graham and Harvey, 2008).

In terms of Big Five personality traits neuroticism appears to be the single most dangerous trait for investors (Peterson, 2007). Although it seems to be counterintuitive, “emotional stability” is least correlated with investment biases. This might be because emotionally stable investors lack critical self-awareness and suffer from biases without realizing it. Using a modified Delphi method Shore (2008) considered contribution of the nine systematic biases to the failure of high-scale corporate investments. He asked twenty two business professionals to read eight cases in which investments failed and express their opinion on what biases were of the highest importance. Four biases (conservatism, illusion of control, selective perception, sunk costs) seemed to be more common than others. Groupthink and managerial overconfidence were stated in 25% of cases, whereas escalation of commitment was not mentioned at all (Shore 2008).

In (Pinheiro-Alves 2008) the behavioral approach is applied for investigation of heuristics to which managers of Portuguese parent firms should have been exposed while making decisions on investing abroad. The author has found that in particular anchoring, strategic inconsistency and herding were common among investors. One third of investments were located in Portuguese speaking countries (anchoring). Since everyone was moving to Brazil and there was a huge stream of news about the attractiveness of the Brazilian market, the strategy ‘not to invest’ can be treated as ‘suspicious’ by the market and damages the reputation of managers (herding).

To sum up, the papers done up to date suggest that heuristics do impact corporate investment decisions. There are only few papers devoted to investment decisions on expansion abroad which have likely been even more susceptible to systematic mistakes due to their complexity and uncertainty of host country’s business environment.

3. Discussion of the framework

Assume a company A is considering expansion into a foreign market where it has not done business before. Business environment of the foreign market is totally predictable. All information which is relevant to investment decision making is available and reliable. The company has an internal routine and knows exactly what information is relevant for the decision making and how this information should be processed to come up with a solution and a way of the implementation of the intended investment. The execution strategy accounts for all relevant and available information at the time of the decision making and during its implementation. Company’s internal capabilities, resources and routines are expected to be used in the way which is the most reasonable under the given business environment of the foreign market.

Under such circumstances investment performance should be accurate meaning that an investment's actual outcome is in line with the expected one.

Therefore, accuracy of investment performance is subject the following conditions:

- i. Existence of an internal routine which is able to recognize what information is relevant for decision making and how it should be processed
- ii. Availability and reliability of relevant information
- iii. Predictability of business environment
- iv. Appropriateness of investment execution strategy.

When and how is investment performance and decision making process affected by personalities of decision makers, their traits and hidden motivation?

For the purposes of our analysis decision makers have following features:

- he or she is acting according to company's internal routines but also relies on his or her own intuition;
- his or her personal interests and motivation are aligned with the company's goals (no principal agent problem);
- personal emotions are supposed to have only a very limited effect since any investment decision is going through a number of corporate routines, checks and balances that should mitigate possible influence of emotions on a final investment decision. Moreover, as Kahneman and Tversky documented systematic mistakes are traced to the design of the machinery of cognition rather than to the corruption of thought by emotion (Kahneman 2011).

In the case above a decision maker plays a passive role. If he or she just follows internal company's procedures (which are supposed to be effective), this guarantees procedural rationality and achievement of a planned investment return. For example, a non-German company A is going to acquire a stake in a German independent gas transport operator. Under the national energy legislation gas transmission operators are overseen by the Federal Network Agency (Bundesnetzagentur) that prescribes companies what investments they have to make and secures them a steady return on equity. In that case the company A faces a very predictable business environment (condition iii). There is only a limited number of relevant factors which need to be appraised. Information (ten-year network development plan, transport tariffs) is easily available and reliable (condition ii). Considering that such acquisition is worth of hundred millions euros, the company should have had a proven internal routine to assess the fair value of the transport operator and elaborate a plan to get things done (condition I and iv). Although the deal sounds to be a big one, it is unlikely that the decision making process on it is adhered to influence of personality of decision makers, unless they have a specific interest.

Let us now analyze what happens when personality of a decision maker is getting more important.

We suggest that the impact of biases is starting to grow if one or several conditions of a precise investment performance are not met. Further, we discuss each condition more detailed.

Internal routine

Internal routine is appearing as a mix of best practices and company's experience. In a company a formalized routine can take the form of an Investment Manual, which defines a sequence and main tasks of the investment process. For example, if someone in a company has an investment idea (investment originator), first of all, he or she should prepare an investment application with a preliminary evaluation of its feasibility and economic potential with a rough business case. Investment application is considered at the company's Investment Committee. If the idea is qualified, the second round investment application has to be submitted. At that stage, a feasibility study should be added by an analysis from all relevant functional departments (marketing, communication, risk management) and/or external consultants. Once an investment application is finalized, it goes through a company's approval mechanism (investment committee, risk committee, management board, supervisory board, shareholders meeting) for taking a final investment decision. If it has been approved, its execution is monitored and documented in an Investment Progress Report. Upon the completion of the investment phase an Investment Finalization Report should be prepared and presented to the Investment Committee. Apart from formal instructions companies have often automatized templates for investment appraisal which are based on a set of assumptions and/or scenario conditions.

Existence of well-structured routines with a feedback mechanism (Investment Finalization Report, Investment Progress Report) along with formalized assessment tools indeed can decrease the influence of decision makers'

personality. Yet it assumes that routines are 'learning' from mistakes over time. This learning can only be effective, if mistakes are fairly and timely recognized and being admitted. Just blaming external factors and a set of assumptions is not valuable for learning. Referring to changed market conditions is easier than acknowledgement of a personal mistake of failing to consider relevant information which was available at the time of decision making and could have been used to develop a hedging strategy or a plan of actions for the case of the appearance of 'unknown unknowns'.

For the valuation of foreign investments the same fundamental principles are applied as for domestic investments. If an investment is performed outside the eurozone, investment appraisal supposes currency conversion. This can be done by explicitly forecasting foreign exchange rates, converting foreign currency cash flows, and then discounting at an appropriate home country discount rate (method A) or by incorporating the expected rate of change in exchange rate in the discount rate when discounting foreign currency cash flows (method B) (Note on Cross Border Valuation 1997).

How should country risks be factored into the investment assessment? It is not advisable to adjust a discount rate by adding a premium risk as it can introduce mistakes and rather distort than clarify the true value. Scenario technique is a better approach. If scenario probabilities are given, it is possible to forecast average cash flows and then to discount them at an investment cost of capital. In our article (Kotov, 2009) we were trying to find out, how German firms performing investment in Russia allows for political, regulatory and country risks. Investors were asked about the following measures:

- CPI – Transparency International Corruption Perceptions Index ranks countries in terms of the degree to which corruption is perceived to exist among public officials and politicians. It is a composite index, a poll of polls, drawing on corruption-related data from expert and business surveys carried out by a variety of independent and reputable institutions;
- CRS – Economic Intelligence Unit Country Risk Service measures political, economic policy and economic structure risks as well as currency, sovereign debt and banking sector. It is designed for commercial bankers, institutional investors and corporate executives who invest in both emerging and developed markets;
- KKM - World Bank Kaufmann-Kraay-Mastruzzi Worldwide Governance Indicator measures the quality of governance and captures six key dimensions of governance (Voice & Accountability, Political Stability and Lack of Violence, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption) for the period between 1996 and present. It is based on approximately 40 data sources produced by over 30 organizations worldwide.

Our underlying assumption was that investment climate indicators might affect a 'foreign risk premium'. As proposed by Dymsza (1972), investors might construct a composite risk factor reflecting country's investment climate risks based on uncertainty of cash flows and then use this factor to discount forecast cash flows. The survey states that only one of six firms (16%) consider investment climate indicators when they appraise investment; more than a half of firms is not familiar with them at all. This result may be due to the fact that firms are not aware of the logic behind these indices. In other words, how can the value 'four' of CPI Index ranging from 'one' to 'ten' be interpreted in terms of the 'foreign risk premium' or incremental cash outflows? What does the increase in the CPI from 'four' to 'five' mean? Should the discount rate be decreased accordingly? There is no commonly recognized solution for this. It is likely that political and regulatory risks are accounted for intuitively by decision makers. An example is the valuation of a country risk indicator, such as CPI, which is nominally the same for all decisions makers. Its interpretation depends on the experience of an individual decision maker. What one decision maker, who is familiar with the country and its specific business practices and language, perceives as a moderate level of corruption, might be evaluated as a 'very high' by another (van de Laar & de Neuboorg, 2006).

Availability and reliability of relevant information

Even if using a company's internal routine decision relevant factors have been identified, information on them may be available to a limited extent or not measured reliably. For a company evaluating an investment in the construction of an underground gas storage abroad, summer/winter spreads (calendar spread between the price of natural gas in summer and winter) represent a key variable on which future cash flows are based and an investment decision depends. In liberalized gas markets summer/winter spreads are available for a midterm period. But how reliable are market values? Can they be relied upon? In the Notes on Cross Border Valuation of Harvard Business School it is said that it is generally better to take advantage of market based prices rather

than allow value to be built upon subjective guesses. Moreover, market prices are easier to get, if there is a liquid market. Yet market prices are not necessary equal to fair values.

Predictability of business environment

Uncertainty is a classical source of heuristics. There are a lot of techniques which can be used to deal with uncertainty (e.g. Monte Carlo simulation, scenario analysis). Uncertainty should be recognized by a decision maker and not getting lost during the evaluation of an investment. Application of scenario and statistical analysis, probabilities and means should not create the feeling of 'extra certainty'. If some variables of the business environment are fundamentally unpredictable, the company's internal routine should be capable of discovering uncertain factors and pushing them through a company's decision making mechanism and corporate governance structure. Only by having recognized uncertainty decision makers are able to take measures and elaborate risk mitigation strategies. Our survey shows that it is not always the case that a company has a 'plan B', even if a rate of success of a foreign investment is estimated at 70% (normalcy bias, neglect of probability bias).

A smooth transfer of information on uncertain variables related to the foreign country's business environment towards the company's management assumes that decision makers know how to process it. It makes little sense to have sophisticated risk management techniques in place and calculate Value-at-Risk at 97,5% if a 2,5% probability of occurrence of losses is anyway neglected as being too low (neglect of probability bias). Or if company applies Monte Carlo simulation, a decision maker should not be confused about getting a probability distribution for investment's net present value and not just a single figure. Processing of such complex information could be tricky and causes using the rules of thumb and/or intuition of decision makers. Intuition is a form of the so called fast thinking or system I which operates automatically and can not be turned off at will (Kahneman 2011). It had not been a problem, should it have not been susceptible to systematic mistakes. To overcome the effects of biases the company's internal routine should secure intuitive solutions to be double checked and analyzed during their execution.

It is worth to mention that uncertainty is not necessary a bad news. For commodity traders market volatility is a key success factor. The more volatile is a market, the higher expected return can be gained (or lost). Uncertainty has a value and can be assessed, for example, by means of real options. In our survey of 2009 (Kotov) two thirds of German investors to Russia mentioned a strategic importance of the Russian market as the reason for the market entrance. In terms of the real option theory it means that German investors directly or indirectly took into account a value of follow up investment opportunities which would have been otherwise lost, had they decided not to expand.

Simplifying investment decision making process by relying on heuristics is not the only possible option for dealing with unpredictable environment. As mentioned before, the feeling of certainty can be created through the introduction of assumptions. By introducing assumptions one can decrease a level of perceived uncertainty and formalize the task in a way that makes slow thinking or functioning of System II possible. If assumptions have been made, managers involved in decision making should be aware of them. Otherwise, unreasonable simplification of the host country's business environment can be counterproductive. Assumptions are a very powerful tool in delivering results which seem to be certain and reliable. However, they should not mislead decision makers. Being not able to forecast natural gas prices reliably, one assumes that prices remain the same starting from the fourth year of the planning period. This may be a valid assumption. Still it remains a simplification.

Appropriateness of investment execution strategy

A Russian company with a considerable experience of operating in foreign markets entered a German retail market. It had proven business procedures and thought it had competences required to complete a successful integration and expand further. A business case was approved internally by its Board of Directors and checked by functional departments of a parent company which was more familiar with the German market through its affiliated companies. At the time of decision making the company could have been aware of key factors and measure them reliably (condition (i) and (ii)). Although the market was volatile, this was a sort of volatility which the company should have been used to (condition (iii)). Everything looked fine, until it came to rolling out. Our internal analysis has shown that the company should have overestimated its capabilities and transferability of its own business processes to the foreign entity. Client relationship management was in trouble. Simple business processes like invoicing, hot-line and customer care were running improperly. Customers began increasingly complaining. Management had to downgrade forecasts. It took over a year, until

management could have taken the situation under control. As seen from this example, the execution strategy is in particular susceptible to such bias as planning fallacy, normalcy, illusion of control, managerial overconfidence.

Table 1 summarizes a couple of heuristics which come to play when some conditions of a precise investment performance are relaxed.

Bias	Description	Condition
Available data	Data collection process is restricted to data that is readily or conveniently available	I, II
Anchoring	Reliance on a past reference or specific piece of information	I, II
Escalation of commitment	The phenomenon where people justify increased investment in a decision, based on the cumulative prior investment, despite new evidence suggesting that the decision was probably wrong	IV
Negativity	Paying more attention and assigning more weight to negative than positive experiences	II
Planning fallacy	The tendency to underestimate task-completion times	I, IV
Normalcy	Refusal of planning or reacting for a disaster which has never happened before	I, IV
Optimism	The tendency to be over-optimistic about the outcome of planned actions	II, III
Illusion of Control	The tendency to overestimate one's degree of influence over other external events	III, IV
Neglect of probability	The tendency to completely disregard probability when making a decision under uncertainty	III
Overconfidence	Level of expressed confidence that is unsupported by the evidence	IV
Sunk cost fallacy	Unwillingness to surrender the current course of activity even if the costs are unrecoverable	IV

Table 1. Heuristics and conditions of a precise investment performance

4. How biases can be captured?

If in the course of investment execution something goes wrong or not according to the plan, it can be caused by the following reasons:

- some relevant information, which has been available at the time of the decision making, is omitted or processed improperly. The internal routine has partly failed;
- investment execution strategy itself was not properly thought through;
- after an investment decision has been made, a new relevant information appeared.

The first two reasons can relate both to the impact of biases and to some other factors which have nothing to do with them. For instance, omission of relevant information can be a result of (i) an ill internal routine (inaccurate market research, poor due diligence and so on) or (ii) illusion of control or similar-to-me effect of decision makers. Our survey made in the year of 2008 among German companies investing in Russia has shown that a lot of German firms think that both business cultures are much closer to each other as they are in reality (similar-to-me effect). Poor investment execution strategy is often caused by managerial overconfidence, planning fallacy or escalation of commitment to a failing course of action. A good example from the merger & acquisitions transactions is a shaky post-merger implementation plan of actions. In particular struggling to integrate a buyer and a seller quite often causes failure of cross-border investments. This is why one of the

leading German strategic consultants pays a particular attention to the cultural integration in case of international M&As. Although appearance of new information which has not existed at the time of decision making is a non-bias related reason, it might cause conservatism or a failure to consider new information. In the end, investment execution plan remained unaltered.

In terms of source of origin investment performance distortions caused by biases or non-bias related reasons can be attributed to the host country's external environment or to the company's internal business processes and resources. For instance, despite information on Russian rivals had been available and reliable at the time of making an investment decision, a leading American retailer failed to estimate properly the level of market competition in Russia and finally had to interrupt its expansion.

Through the perspective of the sources of origin the role of biases can be traced by comparing of:

- i. an impact which host country's external environment and company's internal business processes and resources *have had* on investment performance and
- ii. an impact which host country's external environment and company's internal business processes and resources *were expected to have* at the time of the investment assessment.

It is necessary to note that comparing of ex-ante and ex-post values is again exposed to some heuristics such as hindsight bias ("I-knew-it-all-along" or seeing past events as being predictable) and outcome bias (judging an investment decision based on its actual outcome rather than based on the quality of the decision at the time it was made).

There are two main groups of factors. The first group (Macro) is related to the macroeconomical and institutional environment of a host country; the second one (Micro) - to the microeconomical environment and company's internal capabilities. If a factor impact is measured on a scale from zero (no) to five (very high) and X-axis stands for an actual impact (ex-ante) and Y-axis – for an expected impact (ex-post), then an ex-ante/ex-post risk perception matrix can be drawn. If a factor is plotted on a line crossing the origin of coordinates at 45° to the X-axis, its impact is in the line with expectations. If a factor locates above the line, its impact has been undervalued and vice versa. A sum of quadrats of deviations divided by 300 can be used as a proxy of a degree of biases. This ratio can take values from 0 (zero) to 1 (one). It can be calculated separately in relation to the Macro and Micro factors.

Two examples below illustrate the ex-ante/ex-post risk perception matrix in action.

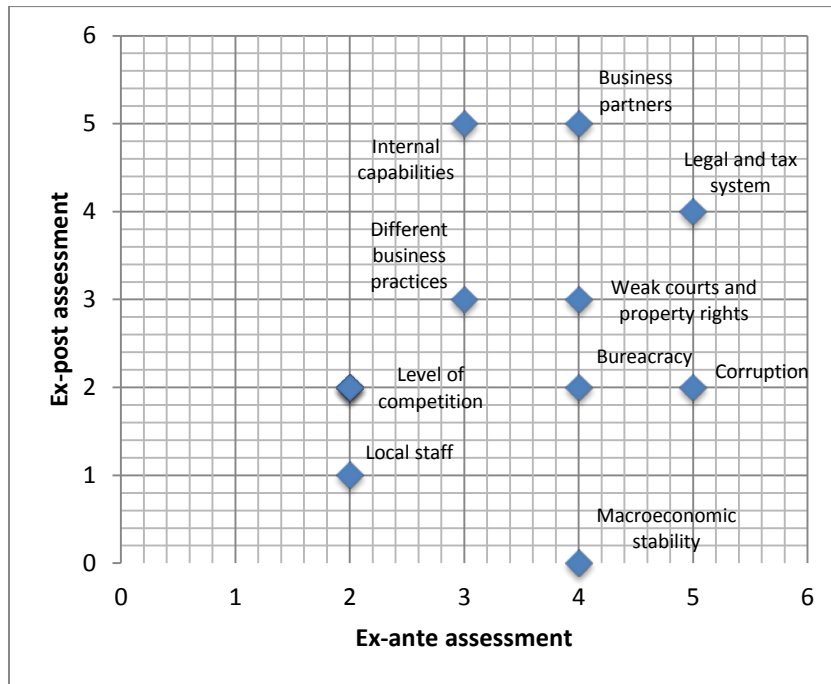
Example 1.

A Swiss tourist company expanded its operations to Russia. An investment had been assessed through a specially designed procedure. The company was optimistic about the Russian market and did not have a Plan B. Following a corporate routine the investment was approved by all company's governing bodies: investment committee, risk committee, supervisory board and general meeting of shareholders. Our analysis has shown that company's concerns about the Russian bureaucracy and corruption have not been met. The macroeconomic stability was not a problem at all. The hurdles came from an inaccurate analysis of company's internal capabilities to execute an expansion strategy as well as from underestimation of competitors. As a consequence, sales did not reach planned figures, whereas worse performance of internal processes contributed to unforeseen expenses. The investment performance fell short of expectations by more than 50%. After some period the company decided to step back. Although at the time of decision making the company was exposed to some biases like optimism and normalcy, closing loss generating operations demonstrates that at this stage the company did not experience the escalation of commitment or sunk costs bias.

Ratio of degree of biases = 0.12

Ratio of degree of biases for Macro factors = 0.25

Ratio of degree of biases for Micro factors = 0.03.



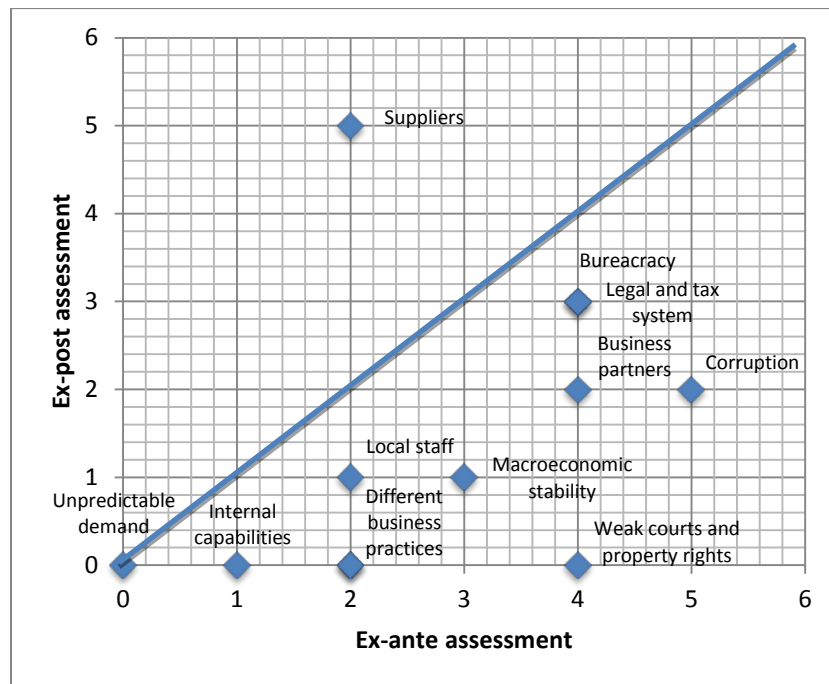
Graph 1. Analysis of an investment to Russia by a Swiss firm

Example 2. An Australian company from the mining industry has acquired a controlling share in an African company in a country where it had had no operations before. At the time of decision making the probability of success was estimated at 20% only. The company developed a Plan B for the case of an investment failure. The investment assessment process followed a company's standard procedure. The investment was approved by the company's management board. From the ex-ante/ex-post risk perception matrix on graph 2 it can be seen that the company overstated all decision relevant risk factors except for the dependency on suppliers (negativity bias). In particular, regulatory and political framework turned out to be not as disruptive as they were assessed before the investment took place. In the end, in spite of a negative influence caused by unreliable suppliers (the most important reason for higher-than-planned expenses) the African investment performed significantly over expectations better (by more than 25%).

Ratio of degree of biases = 0.18

Ratio of degree of biases for Macro factors = 0.25

Ratio of degree of biases for Micro factors = 0.13.



Graph 2. Analysis of an investment to an African country by an Australian firm

5. Conclusions

In the paper we have formulated conditions of a precise investment performance under which a decision on investing abroad is least exposed to an influence of heuristics. These are: (i) existence of an internal routine which is able to recognize what information is relevant for decision making and how it should be processed; (ii) availability and reliability of relevant information; (iii) predictability of business environment; (iv) appropriateness of investment execution strategy. Heuristics are used automatically by a decision maker, if he or she is thinking intuitively in order to solve complex tasks. Usually high complexity and uncertainty are inherent to investment decisions on business expansion due to the non-compliance with some conditions of a precise investment performance. For this reason such decisions are particularly exposed to heuristics.

To mitigate an impact of biases a company's internal routine should create a mechanism for checking investment decisions to be made for a possible exposure to biases. For instance, this mechanism can foresee that an Investment Progress Report and an Investment Finalization Report include a chapter on an impact of biases. To trace an influence of heuristics ex-ante/ex-post risk perception matrix can be used. This matrix examines an impact which host country's external environment and company's internal business processes and resources *have had* on investment performance against an impact which host country's external environment and company's internal business processes and resources *were expected to have* at the time of the evaluation of an investment.

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